# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/955,764 | 09/19/2001 | Jun Li | 10007965 | 9833 |

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| 7590          06/06/2006 | EXAMINER |
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| ART UNIT | PAPER NUMBER |
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| 2192 | |

DATE MAILED: 06/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on <u>22 March 2006</u>.

2a)☒ This action is **FINAL**.    2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-43* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All    b)☐ Some *    c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

## DETAILED ACTION

1.      Acknowledgement is made of Applicant's amendment dated 3/7/06, responding to the

12/7/05 Office action provided in the rejection of claims 1-43, wherein no claims have been

amended.  Claims 1-43 remain pending in the application and have been fully considered by the

examiner.

2.      Applicant essentially argues that the Delucia reference cannot be combined with the Kazi

reference (see "Remarks" pages 3-4 filed 3/7/06), and that the Kazi reference does not disclose a

global causal identifier (see pages 4-5).  These arguments are not convincing and are addressed

in the *Response to Arguments* section below.

3.      **THIS ACTION IS MADE FINAL.**  Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action.  In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action.  In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

## *Response to Arguments*

4.      It is noted that Applicant's submission was faxed with page numbers at the bottom of the

page.  Unfortunately, these page numbers have been cut off by fax footer information, and are

illegible.  The submission appears to have 9 pages of text under the heading "REMARKS".  For

the sake this response to Applicant's arguments, the pages of this section will be referred to

sequentially as "pages 1-9".

5.      On pages 3 and 4 in the "Remarks" section filed 3/7/06, Applicant essentially argues that

the combination of Kazi and Delucia does not teach or suggest recording log data before

invocation.  In support of this argument, the Applicant suggests that with Kazi's trace generation

module "it is necessary that such recordation is done *no earlier* than the actual start and end

times of the invocation of the method" (emphasis in the original).   While no citation from Kazi

is provided to support this claim, Applicant suggests that "without the method invocation

actually starting and ending, there would be no time stamps of start and end times to record."

However, Kazi does not appear to provide any description of the trace generation module that

would necessitate an actual start of a method prior to recordation.  Rather, Kazi appears to be

silent as to whether recordation occurs before or after invocation.  Regardless, Delucia teaches

that log data can be collected before invocation.  Applicant's arguments at the top of page 4

suggest that Delucia's teaching of insertion of instructions before a call statement is quite

different from recording log data before invocation.  However, Delucia teaches that these

instructions are used to "output documentation as an indication that the call statement was

reached."  This appears to correspond directly with "recording...log data...before said

invocation" as claimed in claim 1. It is not clear why Applicant suggests that Delucia "is quite different" from this limitation. Thus, this argument is not convincing.

6.      On pages 4 and 5, the Applicant suggests that the claimed global causal identifier is not disclosed by the Kazi reference. However, this limitation is provided by Kazi's method identifier (see page 5 paragraph 3). The Applicant suggests that the 12/7/05 Office Action provides three separate identifiers in an attempt to cover this limitation, and that this creates confusion and runs contrary to the language of the claim. However, this appears to be a misinterpretation of the rejection. Review of the rejection on page 4 of the Office Action shows that a citation of page 5 paragraph 3 is provided to meet the limitation of a global causal identifier. Applicant suggests on page 4 of the remarks, that Kazi page 8 paragraph 4 and page 7 last paragraph were cited in support of the global identifier. However, this is not entirely the case. While the included passage from page 7 inadvertently focused on thread identifiers, the passage as a whole provides support for recording runtime information in terms of method invocations. Also, the citation of page 8 fourth full paragraph describes a second software component on a remote system and is not cited in support of an identifier. Therefore, Applicant's argument is not convincing.

7.      At the bottom of page 5, Applicant argues that Kazi does not disclose transmitting the method identifier. However, Kazi was not relied upon in support of this limitation. This limitation is taught by Tucker column 3 lines 22-24 which teaches that identifiers can be transmitted. Therefore, this argument is not convincing.

8.      Further arguments regarding claims 8, 12, 20, 29, 33, 34, 36, and 43, appearing on pages

6-9 are based on earlier presented arguments, and likewise are not convincing for the reasons set

forth above.


## *Claim Rejections - 35 USC § 103*

9.      The text of those sections of Title 35, U.S. Code not included in this action can be found

in a prior Office action.

10.     Claims 1-7, 9-11, 13-19, 21-32, and 35-42 are rejected under 35 U.S.C. 103(a) as being

unpatentable over prior art of record "JaViz: A client/server Java profiling tool" by Kazi et al.

(hereinafter referred to as "Kazi") in view of prior art of record "Automatic Insertion of

Performance Instrumentation for Distributed Applications" by Blumson et al. (hereinafter

referred to as "Blumson") in view of prior art of record U.S. Patent 4,819,233 to Delucia et al.

(hereinafter "Delucia"), in view of prior art of record U.S. Patent 6,151,639 to Tucker et al.

(hereinafter "Tucker").


        As per claim 1, Kazi discloses:

        *A monitoring method for a component-based software system operating over one*

        *or more processing devices* See Kazi page 1, Abstract:

                The JaViz performance analysis tool generates **execution**
                **traces** with sufficient detail to determine program hot
                spots, **including remote method calls**, in a **distributed Java**
                **application** program

        also page 8 paragraph 3:

                ...executing on a physically distributed **processor**.

*comprising the steps of:*

*initiating an invocation of a second software component from within an execution*

*of a first software component* See Kazi page 8 paragraph 3 under "Client/server trace

generation":

> The Java remote method invocation (RMI) facility allows **one
> Jvm to execute a method on another Jvm**, which may be
> executing on a physically distributed processor.

*recording a stub start log data including a global causal identifier <within*

*microseconds of> said invocation of said second software component* See Kazi page 7

last paragraph under "Detailed trace generation":

> The trace generation module of **the Jvm is modified** to
> **record every invocation** of a method using time stamps that
> **show the start and end times** of the method with microsecond
> resolution.

also page 5 paragraph 3:

> In addition to the parent-child links to reflect the call
> graph, each record contains such information as the number
> of methods invoked by this method, the time when the method
> started, the time when it completed, the thread executing
> this method, the **method identifier** of the method call being
> represented, and the specific Jvm on which the method is
> executed.

*wherein the second software component executes on a separate thread and in a*

*system remote from the first software component;* See fourth full paragraph on page 8:

> For every **remote method** invoked through RMI, JaViz's
> modified Jvm records these identifiers at both the client
> side and the server side.

Note that this passage shows that a remote component is invoked, which must inherently

execute in a separate thread since a remote system cannot execute a local thread.

*recording a stub end log data including the global causal identifier in said*

*instrumented stub after a response is received from said invocation of said second*

*software component, said response including the global causal identifier* See Kazi page

7 last paragraph as cited above.

*wherein said stub start log data and said stub end log data gather runtime*

*information about execution of said second software component within said component-*

*based software system* See Kazi page 7 last paragraph as cited above.

Kazi does not expressly disclose an instrumented stub, recording log data *before*

invocation, or *transmitting the global causal identifier from the first software component*

*to the second software component.*

However, in an analogous environment, Blumson teaches instrumenting a stub to

collect runtime data. See page 6, Section 6.1: "Our IDL compiler has an

additional command-line flag…to **insert instrumentation.**"

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to use Blumson's stub instrumentation implementation in Kazi's instrumented

jvm. One of ordinary skill would have been motivated to take measurements on certain

operations such as marshalling time that are otherwise difficult, while maintaining a

relatively simple implementation versus modification of a runtime library.

While Kazi discloses that log data is recorded with microsecond resolution (Kazi

page 7 last paragraph under "Detailed trace generation"), Kazi does not expressly

disclose whether this data is recorded before or after invocation. However, in an

analogous environment, Delucia teaches that data can be recorded before and after

invocation. See column 2 lines 37-42:

> Where the target code unit calls another routine, executable write instructions are inserted
> by a processor before and after the call statement to generate in the output documentation

> an indication that the call statement was reached and that the program returned to the
> correct location after the call.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to use Delucia's teaching of code instrumentation techniques with Kazi's

instrumented JVM. One of ordinary skill would have been motivated to place

instrumentation before and after a call as an indication that the call completed

successfully (Delucia column 2 lines 41 and 42).

Kazi discloses that global method identifiers are used at both the server and the

client. See page 9 3$^{rd}$ paragraph:

> The client entry indicates that it is an RMI call to **Object 25 for Method 5** on the
> server... The corresponding entry in the server profile indicates that it is an incoming
> RMI call from the client on Machine cslnt3.cs.umn.edu through Port 4667 for **Method 5
> on Object 25.**

Kazi does not expressly disclose how the same identifiers appear at both the client and

the server. However, in an analogous environment, Tucker teaches that identifiers can be

transmitted between remote machines. See column 3 lines 22-24:

> The system-wide identifier is transmitted in a remote object invocation request to the
> appropriate remote node 102b.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to use Tucker's teaching of transmitting identifiers with Kazi's identifiers.

One of ordinary skill would have been motivated to transmit identifiers when a network

connection is available, but a shared file system is not present (Tucker column 1 lines 14-

17).

In regard to claims 2-7, 9-11, 13-19, and 21-28, the above rejection of claim 1 is

incorporated. All further limitations have been addressed in the previous Office action

dated June 7, 2004.


As per claim 29, Kazi discloses: *processing an accumulated log data and*

*calculating a system behavior characteristic for one or more software components*

*executing within said component-based software system*   See page 5 paragraph 2:

> The tree generation step **analyzes the merged trace files to**
> **create an output file containing the dynamic execution tree**
> for a given client or server program. This output file is
> used by the visualizer to display the call graph.

All further limitations have been addressed in the above rejections of claims 1 and 9.


In regard to claims 30-32 and 35, the above rejection of claim 29 is incorporated.

All further limitations have been addressed in the previous Office action dated June 7,

2004.


As per claim 36, Kazi discloses a computer system (Figure 3). All further

limitations have been addressed in the above rejection of claim 1.


In regard to claims 37-42, the above rejection of claim 36 is incorporated. All

further limitations have been addressed in the previous Office action dated June 7, 2004.

11.     Claims 8, 12, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kazi, Blumson, Delucia, and Tucker as applied to claim 7, 9, and 36, respectively above, and further in view of prior art of record U.S. Patent 5,522,073 to Courant et al. (hereinafter referred to as "Courant").


In regard to claims 8 and 12, the above rejection of claim 1 is incorporated. All further limitations have been addressed in the previous Office action dated June 7, 2004.


In regard to claim 43, the above rejection of claim 36 is incorporated. All further limitations have been addressed in the previous Office action dated June 7, 2004.


12.     Claim 20 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kazi, Blumson, Delucia, and Tucker as applied to claim 9 above, and further in view of prior art of record U.S. Patent 5,146,593 to Brandle et al. (hereinafter referred to as "Brandle").


In regard to claim 20, the above rejection of claim 1 is incorporated. All further limitations have been addressed in the previous Office action dated June 7, 2004.


13.     Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kazi, Blumson, Delucia, and Tucker as applied to claim 29 above, and further in view of prior art of record "Unix Power Tools" by Peek et al. (hereinafter referred to as "Peek").

In regard to claims 33 and 34, the above rejection of claim 29 is incorporated. All

further limitations have been addressed in the previous Office action dated June 7, 2004.
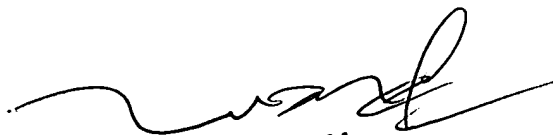

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to J. Derek Rutten whose telephone number is (571) 272-3703. The

examiner can normally be reached on T-Th 6:00-6:30, F 6:00-10:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jdr

TUAN DAM
SUPERVISORY PATENT EXAMINER